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Reconstruction of University Curriculum System and Innovation of Individualized Instructional Mode

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Abstract: This article aims to explore the important role of curriculum system reconstruction and individualized instructional mode innovation in improving the quality of tertiary education. This article adopts a variety of research methods, such as case analysis and empirical research, and summarizes the advanced ideas and practical experience of curriculum system reconstruction and individualized instructional mode. At the same time, taking a specific university as a case, this article deeply analyzes the implementation process, effect and experience enlightenment of its curriculum system reconstruction and individualized instructional mode innovation. The experimental outcomes reveal that the enhancement of tertiary education quality can be notably achieved through the reformation of the curriculum system and the development of individualized teaching methods. This enhancement manifests itself in elevated student academic achievements, bolstered innovative capacities, and increased satisfaction levels. These discoveries underscore the importance of curriculum system reformation and individualized teaching method development in elevating the standard of tertiary education. The study indicates that adopting these strategies—reforming the curriculum system and innovating individualized teaching approaches—serve as efficacious means to upgrade the quality of higher education.

1. Introduction

As globalization and the information age advance deeply, the pace of knowledge updating accelerates continually, while societal demands for talents diversify and escalate. As an important base for talent training, universities are facing unprecedented challenges [1]. The traditional curriculum system tends to overemphasize the systematic and integral nature of subject knowledge at the expense of individualized student development. This imbalance results in a disconnect between teaching content and societal demands, as well as a deficiency in students' innovative and practical capabilities [2]. Furthermore, the increasing diversity among student populations, with varying backgrounds, interests, and abilities, underscores the inadequacy of the traditional one-size-fits-all teaching approach in addressing these diverse educational needs [3]. Consequently, reforming the university curriculum system and innovating individualized teaching methods have emerged as crucial foci in contemporary educational reform.

Reforming the university curriculum and innovating individualized instruction hold immense value in enhancing teaching quality, fostering comprehensive student development, and aligning education with future societal requirements [4]. Initially, curriculum reform enables the optimization of course structures and the updating of teaching content to align more closely with societal advancements and technological progress. This, in turn, bolsters students' employability and innovative capacities [5]. Secondly, adopting individualized instructional modes acknowledges and respects individual student differences, thereby igniting their learning interests and potential, and nurturing holistic development [6]. Ultimately, this research aims to propel the progression of higher education reform and furnish robust support for constructing a more open, adaptable, and efficient tertiary education system. The objective of this study is to investigate pathways and strategies for reconstructing curriculum systems and innovating individualized instructional modes within universities, addressing prevalent issues in current higher education practices.

2. Concept and present situation of reconstruction of university curriculum system

2.1. Theoretical basis

The theoretical basis of curriculum system reconstruction in universities mainly includes Bruner's structuralist teaching theory and Gardner's multiple intelligence theory [7]. Bruner's structuralist teaching theory emphasizes the structure and logical relationship of subject knowledge, and holds that students should master the basic concepts and principles of the subject through active inquiry and discovery learning. This theory provides an important guiding ideology for the reconstruction of curriculum system, that is, we should pay attention to the internal connection and integrity of subject knowledge and avoid the fragmentation and fragmentation of knowledge [8]. Gardner's theory of multiple intelligences emphasizes the diversity of human intelligence, encompassing linguistic, mathematical-logical, spatial, bodily-kinesthetic, musical, interpersonal, and intrapersonal intelligences. This theory provides theoretical support for the innovation of individualized instructional mode, that is, we should respect students' individual differences and multiple intelligences and adopt diversified teaching methods and means to meet students' different needs.

2.2. Status analysis

At present, the current situation of the curriculum system in universities presents some obvious problems [9]. First of all, the curriculum pays too much attention to the systematicness and integrity of subject knowledge, while ignoring the needs of students' individualized development. The teaching content often appears overly abstract and detached from practical application, hindering students' engagement and motivation. Furthermore, courses lack coherence and integration, impeding the formation of a comprehensive knowledge system and thought framework. The evaluation system is overly simplistic, focusing solely on exams and scores, while neglecting the assessment of students' overall quality and abilities. These issues significantly impede teaching quality and student development in universities.

2.3. Reconfiguration requirements

Based on the above analysis, the reconstruction of university curriculum system has become a top priority. The demand for reconstruction is mainly reflected in the following aspects: optimizing the curriculum structure; Strengthen the connection and integration between courses; Pay attention to the individualized development of students; The fourth is to reform the evaluation method. See

Figure 1 for details:

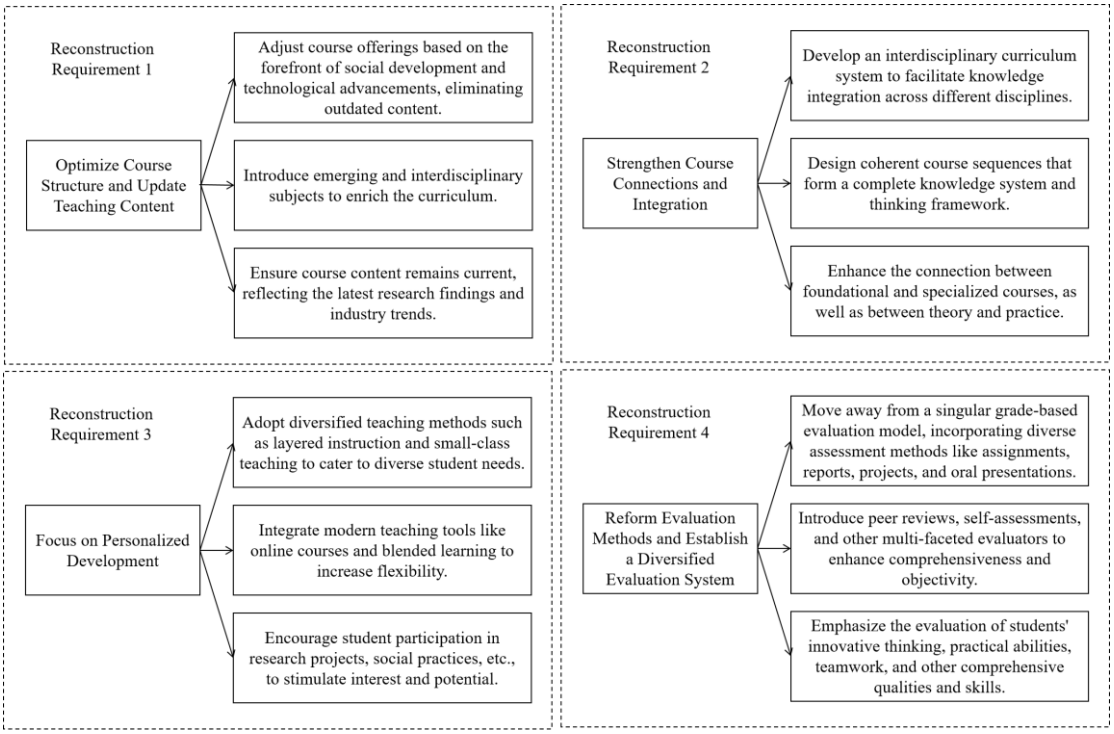

Figure 1: The demand of curriculum system reconstruction in universities

Through the above reconstruction measures, it is expected to solve the problems existing in the current university curriculum system and improve the teaching quality and students' development level.

3. Strategy and practice of curriculum system reconstruction in universities

3.1. Reconstruction strategy

The reconstruction of university curriculum systems is a comprehensive endeavor requiring tailored strategies addressing curriculum design, content integration, interdisciplinary integration, and practical teaching enhancement.

Curriculum design should prioritize students, fostering innovation and practical skills. Modular designs can segment courses into independent modules for individualized selection, aligning with technological advancements and societal progress to ensure up-to-date knowledge.

Content integration is crucial, involving the review and refinement of existing materials to eliminate redundancies and incorporate fresh, forward-thinking content. This process should also emphasize interdisciplinary intersections, breaking down silos to create a cohesive knowledge framework.

Interdisciplinary integration is a pivotal trend in higher education. Universities should encourage interdisciplinary collaboration through courses, lectures, and research projects, nurturing interdisciplinary thinking and innovation.

Strengthening practical teaching is vital for skill development. Universities can enhance practical and problem-solving abilities through experimental courses, training, and societal engagement. Collaborations with industries can establish practical teaching bases, offering students ample opportunities for hands-on learning.

3.2. Practical cases

Taking a university as an example, the school first comprehensively combed and analyzed the existing curriculum system, and found out the existing problems and shortcomings. Then, according to the social needs and the development trend of disciplines, the curriculum system was redesigned, and the cutting-edge science and technology courses, interdisciplinary course and practical teaching links were added. In the process of implementation, the school pays attention to teacher training and resource allocation, which ensures the smooth reconstruction of the curriculum system. Over the years, the school's curriculum system reconstruction has yielded impressive outcomes, notably enhancing students' innovative and practical skills. Consequently, graduates' employment rates and the quality of their job placements have seen substantial improvements. For detailed insights, refer to Table 1.

Table 1: Demonstration of experimental effect of curriculum system reconstruction in universities

Category	Indicator	Before Reconstruction	After Reconstruction	Improvement Ratio
Curriculum System	Number of Frontier Technology Courses	5	15	+200%
	Number of Interdisciplinary Courses	3	10	+233%
	Proportion of Practical Teaching Links	20%	40%	+100%
Teacher Training	Proportion of Teachers Participating in Training	30%	80%	+167%
Resource Allocation	Investment in Practical Teaching Resources (in 10,000 yuan)	50	200	+300%
Student Abilities	Student Innovation Ability Score (out of 100)	70	85	+21%
	Student Practical Ability Score (out of 100)	65	80	+23%
Graduate Employment	Graduate Employment Rate	85%	95%	+12%
	Graduate Employment Quality Score (out of 100)	75	88	+17%

The above table lists in detail the specific numerical comparison before and after the reconstruction of the curriculum system in this university. Through these specific numerical values, we can clearly see the remarkable achievements made in the reconstruction of the curriculum system in this university.

4. Innovative exploration of individualized instructional mode

4.1. Innovation mode

Individualized teaching entails customizing educational services by employing varied methods tailored to each student's unique needs and differences. Its core principle centers on student-orientation, embracing diversity, and fostering optimal potential growth. Currently, notable individualized teaching models include flipped classrooms and blended learning.

The flipped classroom model reverses conventional practices by assigning new knowledge acquisition through videos and readings before class, followed by in-class discussions, interactions,

and exercises. This approach ignites students' interest and autonomy, enhancing their learning proficiency and problem-solving skills.

Blended learning integrates online and offline education. Students engage in self-paced learning and interactive communications via digital platforms, complemented by face-to-face sessions. This model leverages the strengths of both online and offline resources, offering students a richer, more varied learning experience.

4.2. Technical support

Information technology, particularly through advancements like big data and artificial intelligence, is growing increasingly pivotal in enabling individualized teaching, as illustrated in Figure 2.

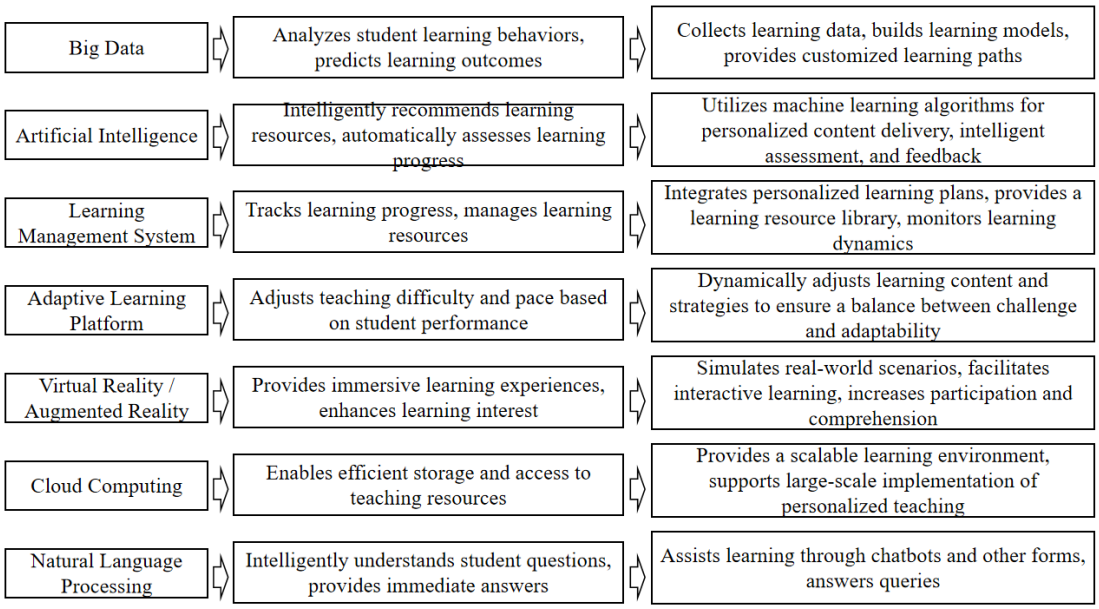

Figure 2: The application and support of information technology in individualized teaching

By collecting and analyzing students' learning data, big data can understand students' learning situation and needs and provide them with more accurate teaching services. Artificial intelligence technology can realize intelligent counseling, intelligent evaluation and other functions, and provide more intelligent support for individualized teaching.

5. Implementation strategy

When universities promote the reconstruction of curriculum system and the innovation of individualized instructional mode, they should adopt a series of comprehensive and meticulous implementation strategies to ensure the smooth progress of reform and the realization of expected goals.

Policy support: Universities should formulate clear policy guidance to provide a solid institutional guarantee for curriculum system reconstruction and individualized instructional model innovation. This includes setting up a special fund to support curriculum reform projects, establishing a flexible credit recognition and conversion mechanism to meet the needs of interdisciplinary course, and establishing an incentive mechanism to encourage teachers to participate in curriculum reform and teaching innovation.

Teacher construction: Teachers are the key to curriculum reform. Universities should strengthen

the training and development of teachers and improve their curriculum design ability, interdisciplinary teaching ability and individualized teaching skills. By organizing workshops, seminars, international exchanges, etc., we will promote the sharing of experience and the renewal of ideas among teachers, and at the same time introduce industry experts to participate in teaching, so as to enhance the practicality and application of teaching.

Resource Allocation: Universities must commit adequate resources-encompassing teaching facilities, experimental equipment, literature, and online learning platforms-to facilitate curriculum system overhaul and effective individualized instruction. Additionally, fostering a resource-sharing framework both internally and externally is imperative for cultivating a vibrant, diverse learning ecosystem for educators and learners.

Technological Empowerment: Leveraging information technology, such as big data analytics and AI-assisted teaching, is crucial. This involves setting up a student learning data analysis system to precisely pinpoint learning needs and challenges, furnishing teachers with individualized teaching insights, and curating online courses and resources tailored to various learning preferences.

6. Conclusions

This article, after thorough and systematic investigation, highlights the crucial importance of reconstructing the curriculum system and innovating individualized instructional modes for enhancing tertiary education quality. Reconstruction of the curriculum system transcends traditional disciplinary boundaries, fostering cross-integration and aligning curriculum content with societal advancements and industry demands, thereby enhancing education's practicality and relevance. Simultaneously, innovating individualized instructional modes caters to students' unique differences and learning needs. By offering diverse learning resources and flexible teaching methods, it ignites students' interest and enthusiasm, boosting learning outcomes and satisfaction.

Drawing from current research, the future of university curriculum systems and instructional modes is anticipated to emphasize flexibility, individualization, and interdisciplinarity. As technology advances, particularly with the integration of artificial intelligence and virtual reality in education, individualized teaching will become more precise, efficient, and offer a richer learning experience.

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References

[1] Liu Y, Zhu T. Individualized new instructional mode for sports biomechanics based on big data[J]. International Journal of Emerging Technologies in Learning (iJET), 2020, 15(20):130-144.

[2] Zhao Y. Individualized teaching and teaching process evaluation for international trade students based on information techniques[J]. International Journal of Emerging Technologies in Learning (iJET), 2019, 14(23):221-232.

[3] Chen S. The Application of Big Data and Fuzzy Decision Support Systems in the Innovation of Individualized Music Teaching in Universities[J]. International Journal of Computational Intelligence Systems, 2024, 17(1):1-16.

[4] Mourtzis D, Panopoulos N, Angelopoulos J. A hybrid teaching factory model towards individualized education 4.0[J]. International Journal of Computer Integrated Manufacturing, 2023, 36(12):1739-1759.

[5] Sandars J, Patel R. Using individualized teaching and learning to improve clinical performance[J]. British Journal of Hospital Medicine, 2018, 79(2):102-105.

[6] Paraskevas M, Tilleman T, Eichen Y, et al. Informal Individualized Teaching (IPT): Bridging Gaps in Theoretical and Practical Knowledge during Idle Times in a Chemistry Lab[J]. Journal of Chemical Education, 2022, 99(12):

3984-3992.
[7] Ísfeld V ðisdóttir S L, Sveinbjörnsdóttir B. The effects of individualized teaching of school readiness skills to children in preschool with attention-deficit/hyperactivity disorder symptoms[J]. Behavioral Interventions, 2021, 36(1):315-326.
[8] Hatcher A, Page J. Parent-implemented language intervention for teaching enhanced milieu teaching strategies to parents of low-socioeconomic status[J]. Journal of Early Intervention, 2020, 42(2):122-142.
[9] Zou F, Chen D, Xu Q, et al. A two-stage individualized recommendation based on multi-objective teaching–learning-based optimization with decomposition[J]. Neurocomputing, 2021, 452:716-727.